

**What is claimed is:**

1. A method of fabricating a MOSFET comprising:
  - forming a polysilicon gate electrode on a semiconductor substrate;
  - forming a first doping layer on an area of the semiconductor substrate, the area including the polysilicon gate electrode;
  - implanting dopant into the first doping layer by means of a high-tilt angle pocket ion implantation;
  - forming LDD regions on a surface of the semiconductor substrate at two sides of the polysilicon gate electrode by diffusing the dopant of the first doping layer into the semiconductor substrate;
  - forming an insulating layer on the first doping layer by diffusing the dopant of the first doping layer into the semiconductor substrate;
  - forming a spacer by etching the insulating layer and the first doping layer;
  - forming a second doping layer on the semiconductor substrate and the polysilicon gate electrode with the spacer; and
  - forming a source region and a drain region on the surface of the semiconductor substrate at both sides of the polysilicon gate electrode with the spacer by conducting a thermal treatment process so that the dopant of the second doping layer can be diffused into the semiconductor substrate.

2. A method as defined in claim 1, wherein said semiconductor substrate comprises Si, GaAs or silicon-on-insulator.

3. A method as defined in claim 1, wherein the first doping layer comprises silicated glass with dopant.
4. A method as defined in claim 1, wherein the dopant comprises B, BF<sub>2</sub>, P, As or N.
5. A method as defined in claim 1, wherein the pocket ion implantation is performed with an angle between 5° and 45°.
6. A method as defined in claim 1, wherein the spacer has a thickness between 50 Å and 500 Å.
7. A method as defined in claim 1, wherein the second doping layer comprises a doped oxide layer and the second doping layer is formed by means of a plasma enhanced chemical vapor deposition process.
8. A method as defined in claim 1, wherein the second doping layer has a thickness between 100 Å and 1000 Å.
9. A method as defined in claim 1, wherein the thermal treatment process comprises a rapid thermal process.
10. A method as defined in claim 9, wherein the thermal treatment is performed at temperature between 950 °C and 1150 °C for 3 to 20 seconds.